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| EXAMINER |
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TRAN, VINCENT V

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| ART UNIT | PAPER NUMBER |
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2655

DATE MAILED: 12/16/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/705,069

Applicant(s)

ABE ET AL.

Examiner

vincent v tran

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The phrase "acoustic signals" is a confusing phrase (page 3, ln.4 and 9) because all audio signals are "acoustic signals".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2, 4, 9-10, 12, 17-18, 20, 25-26, 28, 33-34, 36, 42-43, 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (U.S. Patent No. 6,347,185).

Referring to claims 1, 9, 17 and 25, Takahashi et al. disclose a method and an apparatus for classifying signals and generating descriptors comprising:

dividing an input signal into blocks having a predetermined time length (col.4, ln.21-23);

extracting one or more characteristic quantities (e.g. frequency value, power value, peak frequency) of a signal attribute from the signal of each block (col.5, ln.49-65); and

classifying the signal of each block into a category (e.g. mute, music, human speech) according to the characteristic quantities (e.g. frequency value, power value, peak frequency; col.5, ln.66 – col.6, ln.2 and ln.36-54).

Referring to claims 2, 10, 18 and 26, Takahashi et al. disclose the method and the apparatus for classifying signals and generating descriptors, wherein the signal of each block is classified into any of the categories formed on the basis of types of signal sources (col.2, ln.5-11 and col.3, ln.18-21).

Referring to claims 4, 12, 20 and 28, Takahashi et al. disclose the method and the apparatus for classifying signals and generating descriptors, wherein the input signal is an audio signal (col.3, ln.46-47); and

the categories formed on the basis of signal sources for classifying the audio signal of each block includes one or more than one of silence, voice, male voice, female voice, music, vocal music, instrumental music, noise, striking sound, environmental sound, sound of hustle and bustle, clapping sound and cheering sound and are used for the categorical classification based on the sound sources (col.4, ln.28-31).

Referring to claims 33 and 42, Takahashi et al. disclose a method and an apparatus for retrieving signals comprising:

dividing an input signal into blocks having a predetermined time length (col.4, ln.21-23);

extracting one or more characteristic quantities (e.g. frequency value, power value, peak frequency) of a signal attribute from the signal of each block (col.5, ln.49-65); and

classifying the signal of each block into a category (e.g. mute, music, human speech) according to the characteristic quantities (e.g. frequency value, power value, peak frequency; col.5, ln.66 – col.6, ln.2 and ln.36-54).

retrieving the signal according to the result of categorical classification or by using a descriptor (N Sec's Type) generated according to the category of classification (col.9, ln.11-42).

Referring to claims 34 and 43, Takahashi et al. disclose the method and the apparatus for retrieving signals, wherein the signal of each block is classified into any of the categories formed on the basis of types of signal sources (col.2, ln.5-11 and col.3, ln.18-21).

Referring to claims 36 and 45, Takahashi et al. disclose the method and the apparatus for retrieving signals, wherein the input signal is an audio signal (col.3, ln.46-47); and

the categories formed on the basis of signal sources for classifying the audio signal of each block includes one or than one of silence, voice, male voice, female voice, music, vocal music, instrumental music, noise, striking sound, environmental sound, sound of hustle and bustle, clapping sound and cheering sound and are used for the categorical classification based on the sound sources (col.4, ln.28-31); and

a signal is retrieved by using the descriptor reflecting or corresponding to the result of the categorical classification based on the sound sources (col.9, ln.11-42).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 5, 11, 13, 19, 21, 27, 29, 35, 37, 41, 44, 46 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. in view of Lindemann (U.S. Patent No. 6,316,710).

Referring to claims 3, 11, 19 and 27, Takahashi et al. do not specifically disclose a method and an apparatus for classifying signals and generating descriptors, wherein

the signal of each block is classified into any of the categories formed on the basis of types structures that signals may have and do not depend on the types of signal sources.

However, Lindemann teaches a method and an apparatus for classifying and generating descriptors, wherein the signal of each block into any of the categories formed on the basis of types structures (base on noise, silence and musical gesture types) that signals may have and do not depend on the types of signal sources (Fig.2 and col.4, ln.17-35). The advantage of using the teaching of Lindemann in Takahashi et al. is to determine the characteristics of the sound unit (col.3, ln.60-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which able to classify the signal of each block into any of the categories formed on the basis of types structures that signals may have and do not depend on the types of signal sources in order to provide smooth transitions for slurs by artificially manipulating the data associated with isolated sound recordings, as taught by Lindemann (col.2, ln.44-46).

Referring to claims 5, 13, 21 and 29, Takahashi et al. disclose the method and the apparatus for classifying signals and generating descriptors, wherein the input signal is an audio signal (col.3, ln.46-47).

Takahashi et al. do not specifically disclose a method and an apparatus for classifying signals and generating descriptors, wherein

the categories formed on the basis of structures that signals may have and do not depend on the types of signal sources for classifying the audio signal of each block includes a silence structure where no significant sound exists in the block.

However, Lindemann teaches a method and an apparatus for classifying signals and generating descriptors, wherein the audio signal of each block includes a silence structure where no significant sound exists in the block (col.4, ln.33 and Fig.1, elements #110, #114 and #118). The advantage of using the teaching of Lindemann in Takahashi et al. is to determine the characteristics of the sound unit (col.3, ln.60-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which able to classify the signal of each block into any of the categories formed on the basis of types structures in order to provide smooth transitions for slurs by artificially manipulating the data associated with isolated sound recordings, as taught by Lindemann (col.2, ln.44-46).

Referring to claims 35 and 44, Takahashi et al. do not specifically disclose a method and an apparatus for retrieving signals, wherein the signal of each block is classified into any of the categories formed on the basis of types structures that signals may have and do not depend on the types of signal sources.

However, Lindemann teaches a method and an apparatus for retrieving signals, wherein the signal of each block is classified into any of the categories formed on the basis of types structures (base on noise, silence and musical gesture types) that signals

may have and do not depend on the types of signal sources (Fig.2 and col.4, ln.17-35). The advantage of using the teaching of Lindemann in Takahashi et al. is to determine the characteristics of the sound unit (col.3, ln.60-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which able to classify the signal of each block into any of the categories formed on the basis of types structures that signals may have and do not depend on the types of signal sources in order to provide smooth transitions for slurs by artificially manipulating the data associated with isolated sound recordings, as taught by Lindemann (col.2, ln.44-46).

Referring to claims 37 and 46, Takahashi et al. disclose the method and the apparatus for retrieving signals, wherein the input signal is an audio signal (col.3, ln.46-47); and

a signal is retrieved by using the descriptor reflecting or corresponding to the result of the categorical classification based on the sound sources (col.9, ln.11-42).

Takahashi et al. do not specifically disclose a method and an apparatus for retrieving signals, wherein the categories formed on the basis of structures that signals may have and do not depend on the types of signal sources for classifying the audio signal of each block includes one or more of a silence structure where no significant sound exists in the block.

However, Lindemann teaches a method and an apparatus for retrieving signals, wherein the audio signal of each block includes one or more of a silence structure where no significant sound exists in the block (col.4, ln.33 and Fig.1, elements #110, #114 and #118). The advantage of using the teaching of Lindemann in Takahashi et al. is to determine the characteristics of the sound unit (col.3, ln.60-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which able to classify the signal of each block into any of the categories formed on the basis of types structures in order to provide smooth transitions for slurs by artificially manipulating the data associated with isolated sound recordings, as taught by Lindemann (col.2, ln.44-46).

Referring to claims 41 and 50, Takahashi et al. do not specifically disclose a method and an apparatus for retrieving signals, wherein the points of changes of the signal are detected by using the descriptor reflecting or corresponding to the result of the categorical classification.

However, Lindemann teaches a method and an apparatus for retrieving signals, wherein points of changes of the signal are detected by using the descriptor reflecting or corresponding to the result of the categorical classification (e.g. attack, release, transition, sustain and silence; col.4, ln.17-35; col.5, ln.39-42 and col.9, ln.26-31). The advantage of using the teaching of Lindemann in Takahashi et al. is to determine the characteristics of the sound unit (col.3, ln.60-61).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which able to determine the points of changes of the signal in order to provide smooth transitions for slurs by artificially manipulating the data associated with isolated sound recordings, as taught by Lindemann (col.2, ln.44-46).

6. Claims 8, 16, 24, 32, 40 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. in view of Wu et al. (U.S. Patent No. 6,006,179).

Referring to claims 8, 16, 24, 32, 40 and 49, Takahashi et al. do not specifically disclose a method and an apparatus for classifying signals, generating descriptors and retrieving signals, wherein a vector quantization technique is used as method for the categorical classification.

However, Wu et al. teach a method and an apparatus for classifying signals, generating descriptors and retrieving signals, wherein a vector quantization technique is used as method for the categorical classification (col.7, ln.39-42 and 50-52). The advantage of using the teaching of Wu et al. in Takahashi et al. is to search for the best possible quantization for a given input vector (col.4, ln.25-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method or the apparatus of Takahashi et al. which has a vector quantization technique is used as method for the categorical classification

in order to reduce computational complexity and natural compatibility, as taught by Wu et al. (col.5, ln.65-66).

7. Claims 6-7, 14-15, 22-23, 30-31, 38-39 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. in view of Pertrushin (U.S. Patent No. 6,151,571).

Referring to claims 6, 14, 22, 30, 38 and 47, Takahashi et al. do not specifically disclose a method and apparatus for classifying signals, generating descriptors and retrieving signals, wherein the average and variances of the signal power in the block are used as the characteristic quantities.

However, Pertrushin teaches a method and apparatus for classifying signals, generating descriptors and retrieving signals, wherein the average power (energy, col.12, ln.56) and variance (energy standard deviation is square root of variance, col.12, ln.62-64 and col.13, ln.9) of the signal in the block are used as the characteristic quantities.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method of Takahashi et al. which able to classify the average power and the variance of the voice signal to allow detection of an emotion of a caller in order to provide a quick and effective response when the caller's emotional state is in distress, as taught by Pertrushin (col.22, ln.1-4).

Referring to claims 7, 15, 23, 31, 39 and 48, Takahashi et al. do not specifically disclose a method and apparatus for classifying signals, generating descriptors and retrieving signals, wherein the average harmonic energy is a temporal average of the ratio of the energy of the sound component of the integer times of pitch frequency to the energy of all the frequencies, and the standard deviation energy is a temporal standard deviation of the ratio of the energy of the sound component of the integer times of pitch frequency to the energy of all the frequencies.

However, Pertrushin teaches a method and apparatus for classifying signals, generating descriptors and retrieving signals, wherein

the average harmonic energy (relative voiced energy) is a temporal average of the ratio of the energy of the sound component of the integer times of pitch frequency to the energy of all the frequencies (col.12, ln.62 – col.13, ln.2), and

the standard deviation energy (energy standard deviation) is a temporal standard deviation of the ratio of the energy of the sound component of the integer times of pitch frequency to the energy of all the frequencies (col.13, ln.9).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the method of Takahashi et al. which able to classify the average harmonic energy and energy standard deviation of the voice signal to allow detection of an emotion of caller in order to provide a quick and effective response when the caller's emotional state is in distress, as taught by Pertrushin (col.22, ln.1-4).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Imai et al. (U.S. Patent No. 6,236,970) teach a speech-rate converter slowing down input speech regularly monitors the data length of the input speech and the previously estimated extended output data length for the current rate scaling factor, computing new output data estimate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner **Vincent V. Tran** whose E-mail address:

Vincent.tran@USPTO.GOV.

Phone number: (703) 305-1817

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Talivaldis Ivars Smits, can be reached on (703) 306-3011.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 2600 receptionist whose telephone number is (703) 305-4700.

9. Any response to this action should be mailed to:

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Or faxed to: (703) 872-9314

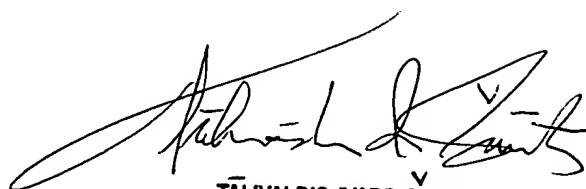
Art Unit: 2655

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Dr,
Arlington VA, Sixth Floor (Receptionist, Tel. No. 703-305-4700).

Art Unit 2655

VINCENT V. TRAN

Date: December 1, 2003



TĀLIVALDIS IVARS ŠMITS
PRIMARY EXAMINER